

Remarks

Claims 1-3, 5-6, 11, 15, 23-24, and 27-34 have been canceled. New claims 35-37 have been added. Claims 4, 7-10, 12-14, 16-22, and 25-26 has been amended of which claim 4 is an independent claim. Claims 4, 7-10, 12-14, 16-22, 25-26, and 35-37 are presented for examination.

Claim Rejections – 35 U.S.C. § 101

The examiner has rejected claim 29 under 35 U.S.C. § 101 as directed to non-statutory subject matter. Without conceding the basis for this rejection, the applicant has canceled claim 29 and the claims depending therefrom. The applicant respectfully requests reconsideration and withdrawal of this rejection.

Double Patenting

The examiner has rejected claim 33 as a substantial duplicate of claim 32. Without conceding the basis for this rejection, the applicant has canceled claim 32 and claim 33. The applicant respectfully requests reconsideration and withdrawal of this rejection.

Claim Rejections – 35 U.S.C. § 103

Independent claim 4 stands rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. No. 5,701,903 to Sano et al. (“Sano”) in view of U.S. Pat. No. 6,293,911 to Imaizumi et al. (“Imaizumi”) further in view of U.S. Pat. No. 6,133,953 to Okada (“Okada”).

In general, the applicant has devised an integrated, multi-channel camera for diagnostic imaging following years of investigation and research during which expensive custom imaging systems were designed and constructed from individual optical and electronic components. The new, integrated camera obtains two separate images – a monochromatic infrared diagnostic image and a three component visible light image – at each pixel location of a solid state sensor using a number of nested p-type and n-type wells. The resulting images are provided as a three separate outputs: a visible light output, a diagnostic output, and a combined output. This integrated camera system can be usefully employed in a variety of imaging applications where a diagnostic infrared image and a visible light image might be usefully superimposed. The resulting device not only simplifies system design. It also simplifies image processing by relieving a user of problems associated with registration and synchronization of these otherwise disparate image sources. The claims have been amended to clarify this inventive concept, and to more particularly recite a specific embodiment of the integrated, multi-channel camera using a nested well solid state image sensor.

The cited art discusses various techniques for using infrared and visible light images; however, none of the art of record suggests the use of a plurality of successive diode junctions formed at the boundary of nested p-type and n-type semiconductor wells as presently claimed, and none of the cited art suggests the use of an integrated camera that captures monochromatic infrared and three-component visible light images and provides a diagnostic output, a visible light output, and a combined output.

The applicant notes for the examiner’s consideration U.S. Pat. No. 5,965,875 to Merrill (“Merrill”) and U.S. Pat. No. 4,238,760 to Carr (“Carr”), which appear to generally teach semiconductor devices that separately capture an intensity of different wavelengths at a single pixel location. Merrill appears to teach the use of nested wells for visible light imaging, but does not appear to even tangentially suggest any extension to

infrared imaging or the usefulness of such an extension. Carr appears to teach a system with a monochromatic visible light sensor and a monochromatic infrared light sensor in a stacked configuration at a single pixel location. However, Carr does not teach any capture of three-component visible light, nor the use of nested wells. Further, neither Carr nor Merrill appear to teach or suggest the use of any semiconductor device in an integrated camera such as the presently claimed camera, which provides image processing to supply three separate outputs – a three-color visible light output, a monochromatic infrared output, and a combined output that superimposes the visible light and infrared images. These references do not teach, suggest, or otherwise render obvious the claimed invention.

The applicant respectfully requests reconsideration and withdrawal of the outstanding obviousness rejections.

Dependent Claims

The remaining claims depend from claim 4, and are patentable at least for the reason that they depend from a patentable claim.

* * *

No new matter is added by these amendments.

In view of the foregoing, the applicant believes that the currently pending claims are in condition for allowance and respectfully requests a corresponding Notice of Allowance.

The applicant believes that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed.

Nothing in this paper should be construed as intent to concede any issue with regard to any claim, except as specifically stated in this paper. The amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The Director is hereby authorized to charge any fees or to credit any overpayments associated with this filing to Deposit Account No. 50-4262.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (781) 453-9993.

Respectfully submitted,
STRATEGIC PATENTS, P.C.

/Robert A. Mazzaresc/
Robert A. Mazzaresc
Reg. No. 42,852
Tel.: (781) 453-9993

February 24, 2010